STICHTING MOLEN DE ADRIAAN (SMA) WELCOMES YOU FOR A GUIDED TOUR IN OUR MILL

Some 60 volunteers assist in several activities – mainly as tour guides and behind the counter. Since 2002 more than 100.000 visitors have found their way to the Adriaan.

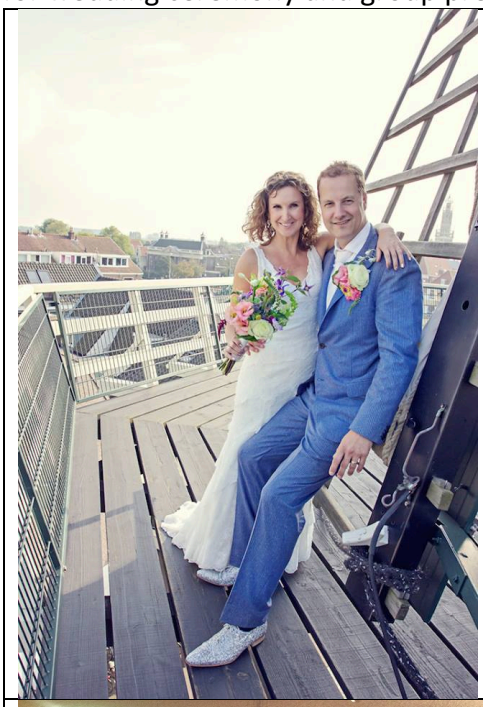
The Tour
The tour is both about mills in general, and the Adriaan in particular. An important part is the place of the mill in the history of the ancient town of Haarlem.

A visit to the Adriaan mill will typically take some 30 to 60 minutes and consists of the following parts: a guided tour, which takes 30 to 45 minutes and an audio visual presentation about the Spaarne river in past 300 years or a video about the windmills around Haarlem (both films are 12 minutes long). After the tour you can buy souvenirs or post-cards and enjoy a cup of coffee/tea. Our volunteers will tell you with passion and pleasure more about Haarlem, Molen De Adriaan and windmills in general.

Molen De Adriaan as trendy location for wedding ceremony, meetings and parties
Many Haarlemmers have found their way to one of City of Haarlems official wedding locations. Regularly we open our doors for meetings, presentations and parties.
What beter way to let your hair down after a full day meeting on the first floor or during a winter party on the ground floor or at the summer BBQ outside the Mill, to get a short tour into the Mill and enjoy the view on the deck of the Mill? At 12 meter height, the view down and out is incredible and the close view of the 24 meter span of the sails too!

An impression in and around the mill

A foto shoot after the wedding ceremony, the boat arriving with the employees and family for the companies summer BBQ, a choir singing during the Koorbiennale, the first floor ready for wedding ceremony and group presentations.



Molen de Adriaan saved for posterity

At the turn of the century electricity started to be used also for industrial purposes (not only for light). As a consequence mills powered by wind and steam became obsolete as business moved the grinding/milling process by electrical power close to or in the factories.

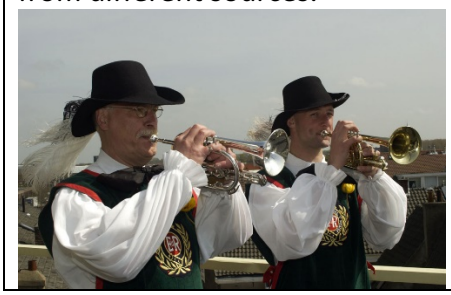
In 1925 the Vereniging “De Hollandsche Molen” (Association “The Dutch Windmill”) bought the Adriaan. It was the first acquisition of this association, which tries to preserve windmills and to keep them going.

Sadly, on a Saturday afternoon, April 23rd, 1932, the mill burnt to the ground. Looking at the photographs it is clear that the fire-fighting material available was not sufficient to save the mill, and it is also clear that one of the sail stocks was already missing as after the heavy storm in December 1930 it had been removed.

It took 70 years before the Adriaan could be rebuilt. During that period many people tried to rebuild the mill. Eventually it was a document, found again which did the job: it stated that the City Council of Haarlem had promised to rebuild the mill! So fill the curve of the river! See the following picture of the river Spaarne without the windmill.

On April 23rd 2002 after three years of building, it was a fact! Although quite capable of functioning as a grain mill, the Adriaan is mainly a demonstration mill and windmill museum.

The tower, on which the mill has been built, was rebuilt as part of a bricklaying training project for young people of the SJK (Stichting Jongerenwerk Kennemerland). The European Community contributed to the cost of the project.
One third of the cost of rebuilding the mill has been contributed by our society (SMA), and the rest of the 1.3 million euros came from different sources.



Founding Fathers

Wim Oosterhof	Dr Ir R. van de Waal	Henk Vijn
		

If it wasn't for the three men you see remembered in front of the mill, Molen De Adriaan would still be a fantasy. The Haarlemmers are grateful for all the energy they put into the project.

Panorama Molen De Adriaan – work in progress

In March 2012 the Haarlemmer Chiel Braat started working on the mural which will span the back of the ground floor. Every Monday afternoon he can be watched at work. We thought that he would have been ready by mid 2015. He now tells us that it will take two more years. When we ask him what will be be on the right side of the panorama, the simple response is, that he doesn't know (yet).

Outside the mill

When you leave the brick building, in order to enter the mill, you can see the remainders of the ship building industry on the Scheepmakersdijk: the shed, renovated by young people (now a restaurant with terrace) and the slipway of the Zuidam wharf (closed in 1989).

Before the fire in 1932 the old mill and the shipyards looked like:

As a representation, in front of De Adriaan there is an artist impression of the shipyard

Walled City of Haarlem

The Adriaan was built on the remains of an old defensive tower at the river Spaarne. Before that there were moats and walls around Haarlem in order to protect the city from enemy attacks.
The first walls around the City of Haarlem are shown as the light blue line on the map. As the city became larger the walls had to be moved. See the progressive expansion depicted with the green line and then the yellow line.

In 1572 Haarlem was besieged by the Spanish army. Despite more than 10.000 cannonballs being fired at the city, the citizens of Haarlem held out for 8 months.

Also thanks to Kenau Simonsdaughter Hasselaer, a sturdy lady who, together with a small group of 150 women, fought alongside the regiment of Prince William of Orange (paid soldiers from all over the Habsburg empire) defending the city.
Many parts of the walls (green and light blue lines) at the left side were destroyed. After 1650 the city became a walled city again by the construction of the Bolwerken (dark blue line).
After 1875 the walls and most towers were taken down. From all the gates in the walls, only the gate to Amsterdam (Amsterdamse poort) has remained.
In the walled city, it was only possible to enter or leave through one of the town-gates. Eventually most of the defensive towers were taken down too.
Even today every evening between 9pm and 9.30pm the ringing of bells can be heard in the inner city of Haarlem, as a memory to bygone days, when people were reminded that the

gates were about to be closed.

At the Adriaan the former city walls are depicted where they connected with the tower: as high as the brick part of the mill, 7.5 meters (about 25 feet). Adriaan Dubois had buttresses placed to strengthen the tower, to take the considerable weight of the windmill.

At the front you can see a later extension, meant as storage for the miller. Against one of the buttresses you can see a mill stone; only recently found, and probably from the Adriaan, as being the closest grain mill.

The wooden upper part of the mill is not fixed to the brick lower part, but its total weight, some 30.000 kg (30 metric tonnes) enables it to stay in place, even in bad weather conditions.

History of the Mill

In the heyday of the windmill- history (about 1850), there were some 15,000 mills in The Netherlands. There were about 80 windmills in the Haarlem region alone, which is now reduced to the 8 remaining windmills nowadays.
About 1,000 windmills still exist in the Netherlands. There is a map on the first model floor which shows you the existing mills.

Technically speaking the remaining windmills in Haarlem including the Adriaan are the responsibility of members of the “Stichting Molens Zuid Kennemerland” (Foundation of Mills in Zuid Kennemerland). Millers of this foundation keep many of the mills turning, mostly on Saturdays. At the Adriaan we are fortunate to have more than one miller availbale, sometimes on other days of the week the mill turns too.

In Santpoort near Haarlem, you will find the only professionally operated working grain mill in the area.
It is called the Zandhaas, and self-milled products can be bought there.

The Adriaan is in working order as a grain mill as well, but its function is mainly to be a demonstration mill and museum.

Molen de Adriaan – it's different functions

The Adriaan, built by Adriaan Dubois (we say Adriaan De Boois) was a merchant from Amsterdam who already owned a 'whim' (or horse treadmill) on the Koudenhorn, which is across the river from the Adriaan. He built his windmill on the foundations of the former 'Goê Vrouwetoren' building.

Adriaan De Boois saw the need for housing. There was no short supply on bricks. Cement was needed. For the next 25 years he had the monopoly for grinding tuffstone. This kind of volcanic stone when mixed with the powder of Marlstone and water results in a waterproof mortar ("Roman cement"). Unfortunately for him he was not as successful as he had hoped.

So he also grounded other material. Oak-bark was finely ground into oak-tan for use in tanneries, while tropical wood was ground to powder for use as a pigment for the dye-industry. Shells for the pottery industry were ground as well.

In 1802, after the end of the monopoly, Adriaan Dubois sold the mill. The new owner, Cornelis Kraan, converted the mill into a snuff mill. Tobacco snuff was highly popular in those days. You can still see a sign showing the mill, high above his former shop where he once sold the tobacco products in 12 Grote Houtstraat in Haarlem.

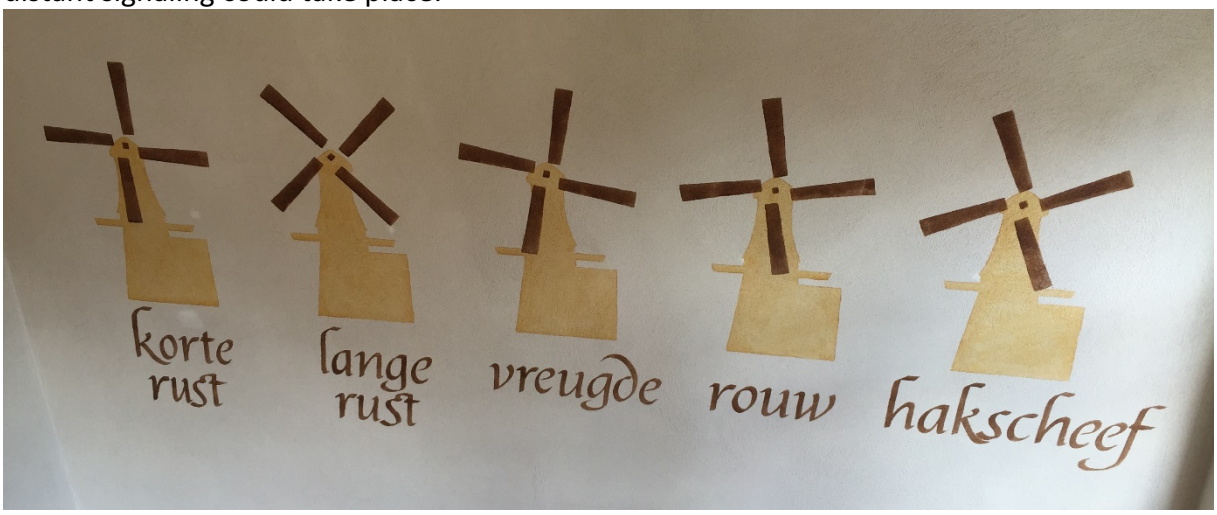
In 1865 De Adriaan was refitted as a grain mill and a steam engine was added, so that even when there was no wind, the mill could still function.

In 1920, the steam engine was replaced and the mill was driven by electricity. The Adriaan then had 5 (!) mill frames: 3 operated by wind and 2 by electricity.

Staircase up to the Mill

In the staircase, on the first floor landing, you will find a depiction of various sail positions and their meaning.

With the flat landscape in The Netherlands, windmills could be seen from far away, and so distant signaling could take place:



- The position “short rest” (korte rust) is obvious. By the way: for practical reasons the miller of this mill will stop the sails just beyond the upright position at the end of the day.
- The “long rest” (lange rust) position indicates a longer period of rest. This position was especially used for polder mills during the summer months rest period. The sail-arms are in the lowest possible position and therefore least likely to be struck by lightning. At least, that’s what they thought…
- The “rejoicing position” (vreugde) indicates that the miller’s family has something to celebrate: for example a wedding or a birth. The sails are in ‘coming’ position (the miller stops the sail just before it reaches its lowest position) and the Dutch proverb on ships ‘he sailed before the wind’, (he prospered), still reminds us of that.
- The “mourning position” (rouw) with the ‘departing’ sail-arm is stopped, just after it leaves its lowest point, indicates sadness and mourning. A number of millers still honours this when for instance a member of the Royal Family dies or during the ‘Rememberance Day May 4th’. It is the same as flying a flag at half-mast.
- The “skewed” position (hakscheef) was used when the mill stones needed sharpening (also called ‘dressing’) as they had become worn and so farmers knew that no milling could be done, and at the same time itinerant millstone dressers were made aware that their services were required.

Of course there are a lot more sail positions, which could vary in different regions. Strangely in the south-east of the Netherlands the “rejoicing” and the “mourning” position are just the other way around!

The second floor model room

Windmills are typically Dutch, but not invented in the Netherlands. They were probably invented separately in different parts of the world: China, Afghanistan (see picture), Iran, the North of France, etc. Mills in Holland typically have 4 sails, in countries like Spain it can be 6.

Afghanistan

Spain

A post mill from the north of France or Flanders, around 1250, might have been the beginning of the Dutch booming windmill industry in later times. The Netherlands can be seen as the “Japan of the windmills”: copy a good idea and improve it: the hollow post mill, the cap-winder, the outer-winder, and the Paltrok mill, are all Dutch windmill inventions.

Model of a inner-winder system

The cap used to roll on wooden rollers, as well as the place of the rollers at the bottom of the cap. As the cap (top floor) is not accessible for safety reasons, visitors are only able to see a model of a cap.

The sails are connected with the wind shaft, in this model made of wood, but in many mills made of cast iron. The brake wheel connected to the main shaft can also be seen.
The brake system or brake consists of a band of wooden blocks around the brake wheel, operated by the brake lever with hauling rope. A surpisingly small amount of movement is needed to take off or apply the brake.

Sail types

- The upper ‘double (framed) sail’ system was one of the earliest systems in our country, can still be seen in Southern Europe. Don Quichot was fighting this kind of sails…..
- The ‘Oud Hollands’ or ‘Common’ sail cross is a combination of wooden wind boards and sails. Quite an improvement, compared to the double system. Less canvasses meant less work. The Adriaan used to have these type of sails, but nowadays we have the jib sail system (see below).
- The ‘Self regulating’ sails system made it possible to have a constant number of revolutions, even when the wind velocity changed. Clever flaps, which do not hinge exactly in the middle are opened when there is an increase of wind, so that the brake at the end of the sail will start operating.
- The ‘Jib’ sail system is relatively young: 1945. The most important part of this system is the wooden part. It provides a lot of power. The wind goes behind the sail, creating low pressure, which makes the sails rotate, this together with the high pressure of the wind at the front of the sails is a powerful combination. The similarity to the leading edge of an airplane wind can be seen

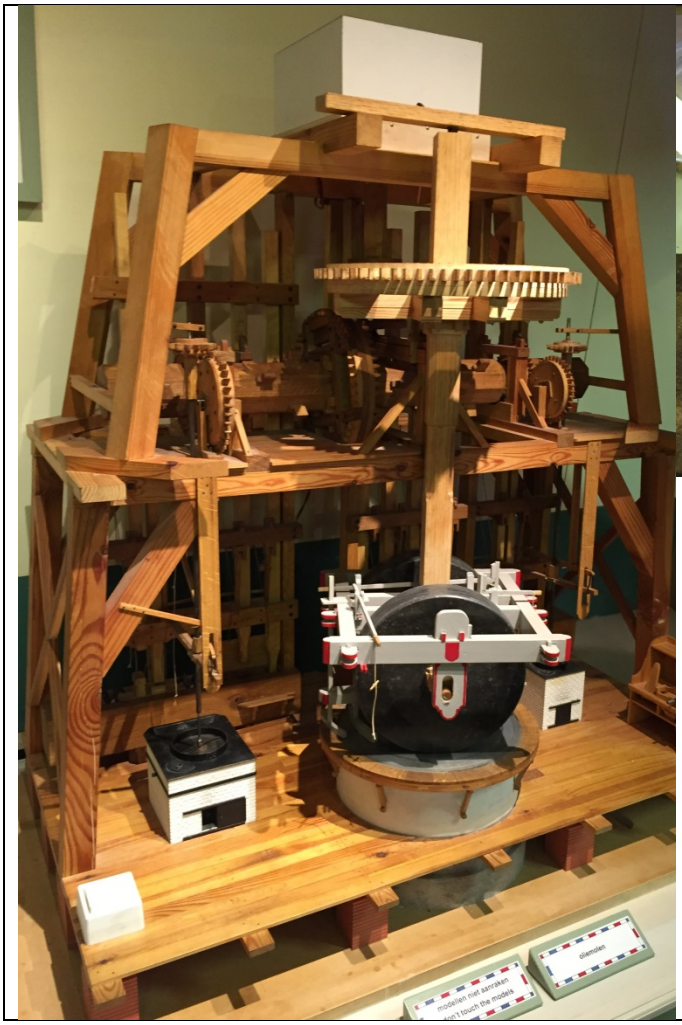
Duvels (Dutch slang for the pins)

The wooden beams of the mill are connected with wooden pins, the so-called mortis and tenon joint. This construction made it possible to build parts of the mill in the workshop, to dismount the parts and rebuild them at the spot. At the same time the mill as a whole could be dismantled, sold and rebuilt somewhere else, which happened frequently: a lot of the wooden mills were situated in a different place in former days.
The pins in this mill are jutting out, but in many other mills these were removed, because it was believed that little devils could sit on them. In the Adriaan, however, we're not afraid of the devil!

In the centre of the showroom we see a display cases with mill products. In the show-window at the right side near the door is tuffstone. The Bavo has been built with this kind of material from the south. Adriaan de Boois made tuffstone into Roman cement, oak bark powder for the tanneries and seashells powder for the earthenware industry. It stands to reason that mills can be sawmills too, in fact they are factories, which can produce everything: paper, dye, pigments, etc.

Oil Mill

Very impressive is the model of a vegetable oil mill. The working of this mill can be seen in combination with its products in the display case opposite.



With the heavy vertical mill stones seeds were crushed and this mixture was pre-heated on the stove to make the oil more liquefied. The third and most important step was the pressing of the oil. The hot crushed material was put into small sacks and put under high pressure. The oil comes out the bottom of the press. A wedge was beaten into the press by means of heavy poles which were lifted up and fell down with a lot of noise. Oil pressers ("olie slager" in Dutch, slager literally translated means "oil hitter" or "oil beater") frequently became deaf within ten years, which does not come as a surprise!

Some of the oil mills made use of a second pressing. The residue 'cake' (see display case) was used as cattle-fodder.

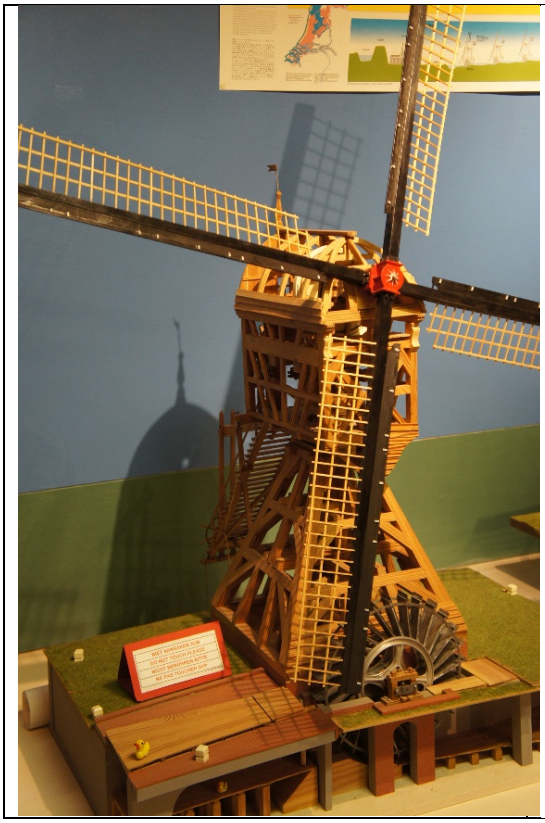
Tobacco Snuff Mill

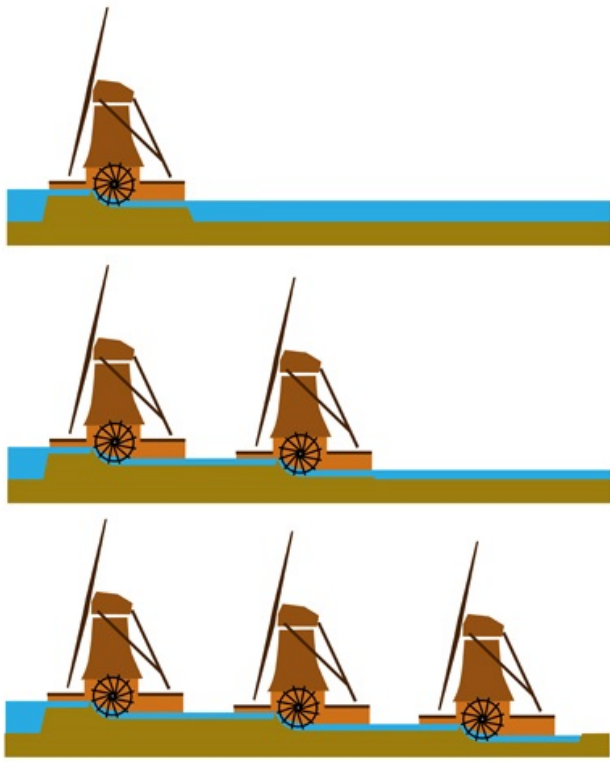
In 1802 the mill was transformed into a tobacco snuff mill, highly fashionable in those days; it was thought to be healthy! Tobacco-leaves and a tin of snuff can be seen in the display case.

Polder Mill

A very important type of mill for our country used to be the ‘polder mill’ (or drainage windmill, not to be mistaken for a water mill, a water-powered mill). Polder mills were used to drain large parts of the west part of the Netherlands, as can be seen on the chart on the wall. The first polder was reclaimed in 1612, and is now a World Heritage site. Rich Amsterdam merchants made poldering a business project and it turned out to be a very good investment. The project made Leeghwater famous, for example.

Polders such as the Haarlemmermeer with Schiphol Airport ‘inside’ can be some 5 meters (around 16 feet) below sea-level. The Haarlemmermeer, by the way, was drained by means of steam engines. One way of lifting water higher up than one mill can manage was to put mills in cascade, working together (called a “three series”) each lifting the water up one step (1 to 1.5 meters or 3 to 4.5 feet) to the “Ringvaart”. This system is called “stepped drainage”





Archimedes screw

The screw pump, or Archimedes' screw, was quite an improvement compared with the old scoop wheel. The screw was able to tackle some 3 - 4 meters (10-13 feet) lift. Turning the screw brought the water up. Doors prevented the water going back when the mill was not working. The right picture shows the Penningsveer Mill nearby.

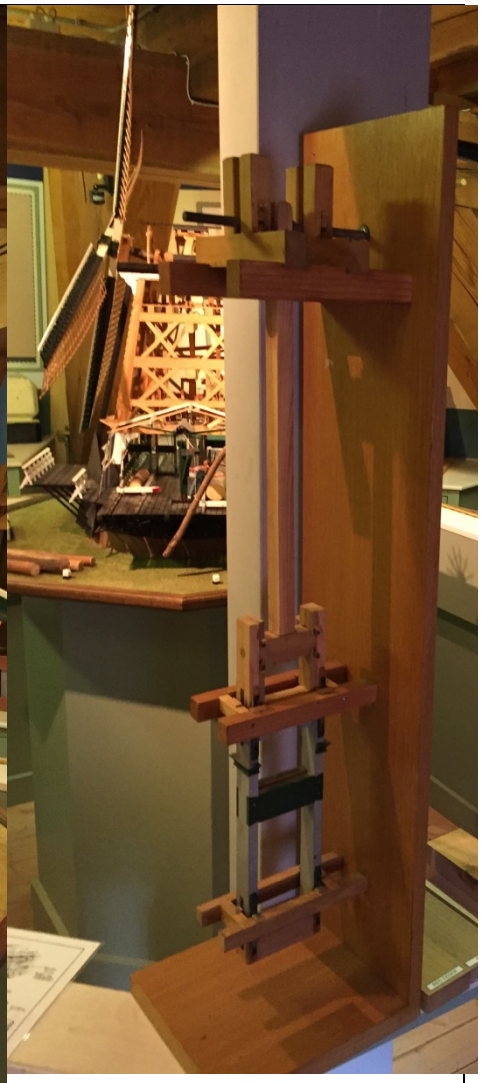
In the display cases several mill products such as spices, mustard, cocoa, etc are displayed.

Outside next to entrance door, the worn-down millstone can be touched. It isabout 15cm (5”) less thick compared with a brand new mill stone. If the stonedust ended up in the flour, where did it go…….

There were many breweries along the river Spaarne. Today some of the best beers in the world are produced in Haarlem. One of them is Adriaan Wit by Jopen.

Saw Mill

In the center of the room is the model of the saw mill ‘De Eenhoorn’ (the Unicorn). Trees, initially from local forests, and then from far away in Germany were transported as log rafts floating down the Rhine and finally on the river Spaarne to the saw mill. Nowadays De Eenhoorn, which is only a few miles away in South Haarlem, produces the timber for maintaining and preserving the mills in Haarlem and in the region.



The Eenhoorn is a rare mill: only 5 of this type are still in use in our country. This type of windmill is called a Paltrok mill, named after the clothing of the men from the Pfalz (Germany), which guided the logs on the rivers. A Paltrok is not a cap mill: the entire mill turns into the wind. This type is typically Dutch, invented by Cornelis Corneliszoon. Once, some 400 of this type of mills were operating in the Zaan area alone. Before that, timbermen worked with cross-cut saws. One mill replaced 60 men sawing by hand and thanks to these sawmills the Dutch East India Company (VOC) could build their enormous fleet and prosper accordingly.

An important invention was the crankshaft, invented by the Romans 1200 years earlier, which converts the rotary movement of the sail blades of the windmill into an up and down sawing movement, essential for a sawmill. The model shows this well.

The third floor Adriaan model floor
When you enter you see immediately the model of the Adriaan, made with the help of old photographs. This model was helpful in the rebuilding of the real one. You can see yourself where you have been and what is still to be seen.

The Adriaan is an octagonal mill or smock mill with a stage, built high enough to catch as much wind as possible. The Adriaan is an outer top-winder. By turning the cap and sails, using the winding wheel, the sails are set to face the wind. The cap rolls on rollers, nowadays made of cast iron, but they used to be of wood (remember the example on the floor below)

The parts of the windmill were made in the workshop of Poland in Oterleek 40 km (25 miles) north of Haarlem. The name Poland is still to be seen on some of the wooden beams and does not mean “coming from Poland”. During the construction, all of the different parts of the mill had to be lifted into place in one day. This had to be done so quickly, as it was only permitted to block navigation on the river for a short time.

Model of the milling process

Via the system of sack hoisting, grain is brought up to the mill floor. The sacks are emptied into the hopper and the grains fall through a trap door into the feeder shoe. Attached to this shoe is a pole which is pushed against the square beam, which causes ‘shaking’.

The grain falls into the center hole or ‘eye’ of the upper millstone, called the runner stone and the grain is ground into flour. This flour falls into a little slot next to the stones and is transported to the flour spout by means of a “sweeper”. Bundled into sacks on the floor below it is ready for transportation. Quite simple!

The present mill stones in the Adriaan are not stone, but a combination of emery (25 %), quartz (25 %) and concrete (75 %). A piece is on display.

In the show-window there are more mill products: milled malt for instance, used for our own beer – brewed several years ago as a fund-raising item to support rebuilding the Adriaan. Mills need all the donations they can get, year in, year out!

The miller used to have his storage room here in old days or he used it for repairing things.

Stichting Molens Zuid Kennemerland

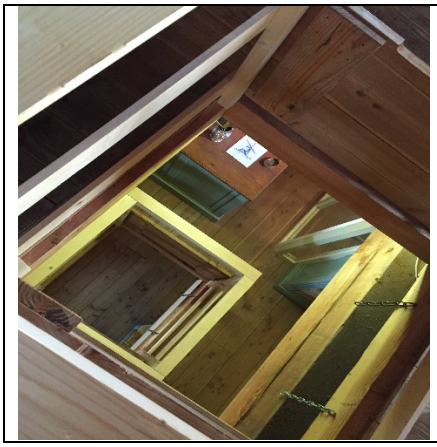
Our sister organization, the “Stichting Molens Zuid Kennemerland” (Foundation of Mills in Zuid Kennemerland) is responsible for the maintenance of all the windmills in Haarlem. They have their own workshop in Schalkwijk, near the sawmill De Eenhoorn (the Unicorn). Volunteers work there on Wednesdays, but on other days too. The millers of this foundation are responsible for working the mills, including De Adriaan. On one wall, the mills maintained by the “Stichting Molens Zuid Kennemerland” (Foundation of Mills in Zuid Kennemerland) are shown.

Almost all the models you see in Molen De Adriaan are the handycraft of one man. His name is Jos van Schooten, miller on De Eenhoorn. His website is www.penterbak.nl

Fifth floor – the milling floor

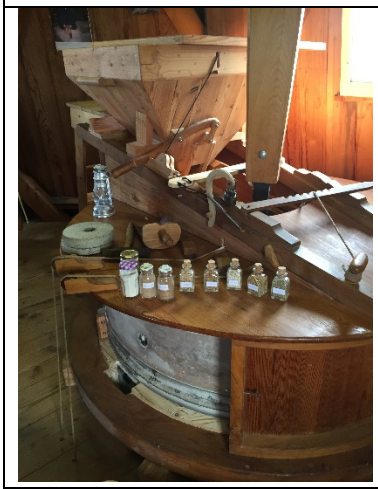
The model two floors down and the ‘real stones’ can be compared.
Grain is lifted up in sacks from the ground floor by hoisting them up.

The sack hoisting system, called “luiwerk” in Dutch (‘lui’ means lazy), is named after the tugging of the ropes for ringing of church bells (luiden van de klokken) and has nothing to do with a lazy miller.



The grain is fed into a hole in the upper stone through the hopper (on the mill frame). The miller places the stone spindle against the spur wheel around the main shaft. The spindle is connected with the upper stone, the running stone. It stands to reason that the windmill blades are stopped whilst this is done.






The gate below the hopper is opened and the grain falls into the feeder shoe. Because the square pole is turning the feeder shoe shakes. The grain falls into the ‘eye’ or central hole and ends up between the running stone and the bed stone. The stones have furrows through which the flour is transported and ground. A kind of little broom is attached to the running stone so that the flour falls into the gutter beside the stones. The gutter transports the flour towards the meal sack on the floor below.

Everything revolves around a beautiful oak beam, the main shaft, which reaches into the cap and is connected with the windshaft. Various types of wood are used in mills. The wood is oiled to keep it from wear and tear and to make it go smoothly, hopefully for years on end.

On the stone cage lies the hammer, used for stone dressing and there is a photo of a miller dressing a mill stone on the wall. Below (left) you see the top stone removed and placed.

Het maalkoppel ligt uit elkaar

Het maalkoppel met de steenspil

The cap itself is not accessible for groups of visitors, as there is not enough room and for safety reasons, let alone when the mill is working.

The fourth floor (stage floor or gallery floor, or flour-meal floor).

The flour comes through the flour spout from the mill frame above. You can see that the Adriaan really can grind: there is still some flour to be seen. And the dust is actually flour. Together with the stage, the stage floor is a very important part of the mill. The miller can control the amount of grain being transported into the millstones by handling the two ropes, which are connected to the feeder shoe above. In addition, at the same time he can adjust the space between the two millstones and in doing so making the flour finer or less fine. He can watch the weather and work the mill at the same time.

The flour falls into the flour sack and when it is full, a new one is put into place to be filled.

Through the wooden trap doors the sacks reach the ground floor.
Behind the flour spout a heavy beam can be seen on which the spindle of the runner stone upstairs is situated. The beam is part of the system which regulates the space between the mill stones.

This floor is the control room of the miller. In fact you can think of a tour of De Adriaan as a walk through a large machine – a wind powered grain mill!

The Stage

What a beautiful sight! The stage is 12 .7 meters (42 feet) above the ground. It is not a small mill indeed! The top of the sails is 37 meters (121 feet) up. The winding wheel, which is connected to the the tail beam can be seen. To set the sails to the wind, a winding system is used, consisting of a winding wheel and a cable connected to the shaft. The cable unwinds and there are hooks to fix the cable on different parts of the stage. The sails are set to the wind by winding the cable: winding the mill. The winding wheel needs to be of a large diameter for increased leverage, so that it can be easily operated bu one man – the miller.

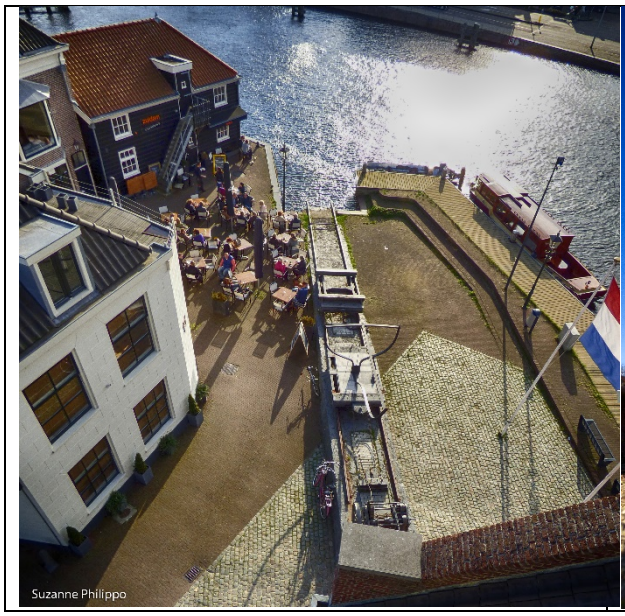
Beside the tail is a thick rope, with which the brake is operated.
The jib sail system installed on this windmill can be seen easily if the windmill sails are not turning. The sail span of the Adriaan is 24.3 meters (80 feet), which makes it one of the bigger mills. The biggest sail span of a mill in the Netherlands is 29.5 meters (97 feet).

Depending on the force of the wind, the sail cloth is fully or partially 'set' by the miller. Because of the jib system the Adriaan can speed up even if there is little wind! An ideal speed is about 15 revolutions per minute (rpm). At that point the sail tip-speed is then about 70 kilometers per hour (44 mph). Understandable that someone being hit by the sails will cause them permanent damage and that is why when the sails are turning that half of the stage is closed off for safety reasons.

So far a lot of technical stuff, but now, on the stage, it is time to turn to outside the Adriaan and look at Haarlem and for you to know more about the history of Haarlem:

- The city originated on a beach wall, thousands of years old, along the river Spaarne
- It got its name from: haar= sand, loo = forest and heim = home.
- The Amsterdam gate is the only remaining part of the city walls, running from the mill.
- The city has a lot of almshouses; from here we can see Teyler's almshouse and Noblet's almshouse.
- The city has many interesting churches and cathedrals: Two Bavo's, the Bakenesser church and the Waalse church.
- From the police station at one side you can walk to the other side: the reform prison with its dome-shaped roof.

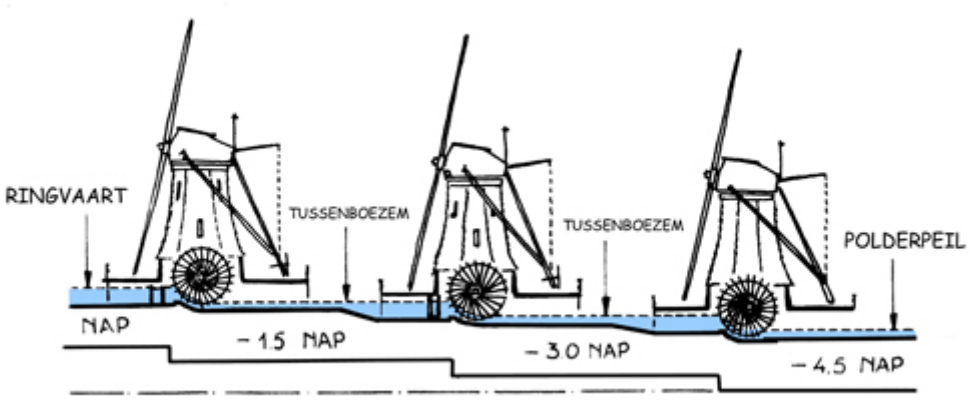
The center of Haarlem is ideal to walk around and enjoy the historyfrom the old buildings, statues, doorways, and canals.



Typical mill terms Dutch - English				
De Adriaan	***Is a***		***Het gaande werk***	***the turning system***
korenmolen	corn mill/grain mill/flour mill		bovenas	wind shaft
8-kant molen	smock mill		bovenwiel	brake wheel
stellingmolen	stage mill		vang	brake
			vangstok	brake lever
Molensoorten	***types of mills***		vangtouw	hauling rope
standerdmolen	post mill		koningsspil	main shaft
wipmolen	hollow post mill		spoorwiel	spur wheel
poldermolen	drainage windmill		luiwerk	sackhoisting system
watermolen	watermill		luitouw	hoist rope
Zolders	***floors***		***Malen***	***grinding***
kapzolder	cap floor		maalstoel	mill frame
steenzolder	stone floor		steenkuip	stone cage
maal/stellingzolder	meal floor		kaar	hopper
			schuddebak	(feeder) shoe
Wieken	sails		maalsteen	mill stone
wiek	sail		maalstenen	Pair of millstones
fokwiek	jib sail		loper	runner stone
zeil	cloth / sailcloth		ligger	bed stone
zwichten	reefing		billen van stenen	to dress mill stones
			molensteenkerf	millstone furrow
Kruien	***Setting the sails into the wind***		meel	flour
kruien	winding		meelpijp	flour spout
bovenkruier	top-winder or wheeler		molenaar	miller
onderkruier	‘under winder’			
binnenkruier	inner-winder		Diversen	Misc.
buitenkruier	outer-winder		scheprad	scoop wheel
kruirad	winding wheel		vijzel	screw

Molengang

One mill can lift water 1,5 meters. A polder at 4.5meters below sealevel (NAP) needs three in cascade.



How does a corn mill work (hoe werkt een korenmolen).
The following film shows you how a corn mill works (in Dutch) but easy to watch. Enter the foolwoing link in your browser of your PC/smartphone/tablet.
http://moleneducatief.nl/media.php?m=8&c=50

Molen de Adriaan op Youtube (2008, 9:35 min)
This film shows how the Haarlem mill Molen de Adriaan works, without voice over.
https://www.youtube.com/watch?v=2piCzE9HHXM